



Minutes of 16th DQWG Meeting

Online event (9-10 February 2021)

FINAL MINUTES

1. OPENING AND ADMINISTRATIVE ARRANGEMENTS

The meeting was chaired by *Mr Rogier Broekman (Netherlands)*. Forty-six delegates (a record for the DQWG!) representing 18 Member States (Brazil, Canada, China, Denmark, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, Norway, Portugal, South Africa, Sweden, United Kingdom and United States), 2 representatives of the RENCs (IC-ENC¹, PRIMAR), 7 expert contributors (IEHG², ISO, NWIC³, Portolan Science, SevenCs, Teledyne-Caris and University of New Hampshire) and 2 stakeholders (CSMART⁴, INTERTANKO) attended the meeting. The IHO Secretariat was represented by *Assistant Director Yves Guillam* and *Technical Standards Support Officer Jeff Wootton*. Apologies were received from Australia and New Zealand.

The agenda was adopted without changes.

The DQWG Terms of Reference were viewed, no comments or amendments.

The DQWG webpage has been updated as follows (**DQWG16/01**):

- The list of WG members was updated (*Basic WG Documents*).
- Added the Quick Reference S-1xx Feature Catalogue zip file with various S-1xx FCs in excel format (*Reference Documents*).
- Quality of Bathymetric Data – Decision tree: now under discussion with S-101PT (*Reference Documents*).
- Data Quality Model removed (*Reference Documents*).

It was decided that hosting a DQ Wiki was not needed at this time.

2. MATTERS ARISING AND HSSC WORK GROUP REPORTS

The election of Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly (ToR 4.d. refers). The last ordinary session of the Assembly took place in November 2020 so for this meeting the election of Chair and Vice-Chair was required. There was one nominee for Chair from NL and no nominees for Vice-Chair and Secretary.

The HSSC12 List of Decision and Actions for DQWG are:

- HSSC12/46 -> translation of S-67 (action).
- HSSC12/47 -> review by DQWG of S-1xx PS before submitting Ed.2.0.0 for approval to MS (decision).
- HSSC12/48 -> approval of the recommendations on conditional visualization of quality of bathymetric data and transfer of the results to the S101PT (decision).

¹ Chair of the S-101 Project Team

² Inland ENC Harmonization Group

³ US Naval Information War Center

⁴ Carnival's Center for Simulator Maritime Training

The HSSC Chair and WG Chairs held an online meeting on 9th of December 2020. Its report is can be found at www.iho.int > HSSC > Miscellaneous. For DQWG the following items are of interest:

- Target 1.2: develop standards, specifications and guidelines in the areas of data assurance, including cyber security and data quality assessment.
- SPI 1.1.2: 7 Product Specifications currently (2020) identified for navigation, route monitoring mode. By 2026, 100% should be operational. (identified are S-101, S-102, S-104, S-111, S-124, S-128, and S-129).

The outstanding actions from DQWG15 are:

- DQWG15/04: Check the model components across S-1xx for timeUncertainty as introduced by TWCWG. -> To be included in review of S-104 and S-111.
- DQWG15/08: Develop software to translate Feature Catalogues into excel format.
- DQWG15/09: Update S-100 part 4c with ISO-19157.
- DQWG15/14: Monitor and report inconsistencies between S-67 and INT-1 section V.

The outstanding actions were discussed and updated accordingly, see Annex B.

The Chair introduced the Process of ISO-9001 principles for development of S-101. The HSSC has requested the DQWG to pursue this based on the Council decision C4/40, under supervision of the HSSC Vice-Chair and with support from Sweden.

The S-101PT Chair (*Tom Richardson – IC-ENC*) presented the report of the S-101 Project Team. The S-101 Ed.1.1.0 will be delivered following the publication of S-100 Ed.5.0.0. Two subWGs have been established: Data Model (*lead Jeff Wootton*) and Portrayal (*lead Alvaro Sanchez*). The portrayal group has two active issues related to Data Quality. Good progress has been made on Validation Checks. An initial draft is close to being ready for internal review. The principles of ISO-9001 will be applied to the revision of S-101. Timeframe between S-101PT and DQWG to be harmonized. **(DQWG16/02 – permanent)**

The CSBWG⁵ Vice-Chair (*Marta Pratellesi – Italy*) presented a request from the CSBWG: “Request for guidance from the IHO DQWG regarding the usage of crowdsourced bathymetry data on official charts produced by Hydrographic Offices.” In particular, the question was to support the CSBWG through the draft of a white paper by DQWG for HOs usage of CSB data, providing advices and best practices. This request may be (partially) incorporated in the general guidelines from survey to CATZOC. **(DQWG16/03)**

3. DATA QUALITY CHECKLIST

The S-97 IHO Guidelines for Creating S-100 based Product Specifications (Ed.1.0.0 June 2020), part C – Data Quality is based upon the Data Quality checklist that was created by the DQWG. It shows ten recommendations for the development of S-1xx based Product Specifications. If some data quality measures are not applicable to that particular Product Specification, they can be omitted.

⁵ Crowdsourced Bathymetry Working Group

4. REVIEW S-100 BASED PRODUCT SPECIFICATIONS FOR DQ ELEMENTS

This is the primary objective of the DQWG. The Chair introduced the current Product Specifications that are available at <https://iho.int/en/standards-and-specifications>. A crosscheck matrix tool is available that lists the 10 recommendations from S-97 and the published Product Specifications. A subWG is created to perform the review of the available Product Specifications, NL, SE and UNH volunteered to take this task. **(DQWG16/04)**

5. INTERNATIONAL STANDARDS

ISO-19157 is current, no other standards were discussed.

6. GUIDANCE TO HYDROGRAPHIC OFFICES ON DQ ASPECTS

Chair presented the S-1xx Feature Catalogues – relations. As the S-1xx Product Specifications and associated Feature Catalogues are officially published and available, the content and structure of Feature Catalogues is difficult to understand for unexperienced users. For this reason, a presentation was created during DQWG15 “Explaining Feature Catalogues.” The available Feature Catalogues have been translated into excel format. No special software is needed, mandatory items are in normal text, and *optional items are italic*. It provides a clear overview of the different components of the Feature Catalogue and how they are related. It allows all people to have the same basic knowledge of the Feature Catalogues. It serves as educational purpose, not as a registry. It will allow the DQWG to horizontally crosscheck different Feature Catalogues against each other to identify differences. Once differences are identified, they can be classified in order to be resolved or accepted. Feature Catalogues between different Product Specifications do not have to be identical, as long as they do not cause any interoperability issues in operational usage.

Crosscheck of all available S-1xx Feature Catalogues against the S-101 Feature Catalogue will be done once S-101 Ed.1.1.0 becomes available. This should eliminate interoperability issues between other S-1xx Feature Catalogues with S-101 for Ed. 2.0.0 of S-101. **(DQWG16/05)**

Chair presented “Guidelines and recommendations for the population of CATZOC values from survey data.” The S-44 Ed.6.0.0 has been officially published by the IHO (Sept 2020). Ten DQWG Member States have provided their national methodologies from survey to CATZOC. With the new release of S-44, the translation from survey to CATZOC needs reviewing. It is the intention of the DQWG to write a document providing general guidelines and best practices for all IHO Member States. This is part of the task to ensure harmonized implementation. Items to take under consideration are definitions (semantics), intended usage, requirements, and numerical calculations of horizontal and vertical uncertainty, usage bands/compilation scales.

A subWG was created to perform this task. **(DQWG16/06)**

PRIMAR has offered to perform a query on their database with of CATZOC values against Usage Bands. **(DQWG16/07)**

7. DATA QUALITY EDUCATIONAL MATERIAL

MSA China introduced a proposal to translate S-67 Mariners’ Guide to Accuracy of Depth Information in Electronic Navigational Charts (ENC) (Edition 1.0.0, September 2020), into Chinese and to maintain its updates in Chinese. This proposal was warmly welcomed and agreed. **(DQWG16/08)** France kindly informed it had already started on its translation into French.

8. METHODOLOGY FOR THE DISPLAY OF QUALITY INFORMATION

Christos Kastrisios of the University of New Hampshire demonstrated the latest developments in the portrayal of quality of bathymetric data. This was well received. Chair noted that the implementation phase of this concept is now handled by the S-101PT. Contact will be made between the UNH of the S101PT subWG Portrayal lead to continue testing this concept.

9. NEW DATA QUALITY TOPICS FOR CONSIDERATION OF HSSC

Chair presented a paper and presentation from NL: autonomous shipping and Data Quality. It is based on the concept of portrayal of quality of bathymetric data and it shows the need for HOs to actively populate appropriate uncertainty values in S-101 ENC's. Autonomous shipping is mostly about avoiding collision to other ships but also to underwater isolated objects dangerous to safe navigation. NL has adopted the policy to actively populate all POSACC/SOUACC values of their entire existing portfolio in advance of the transition to S-101 to facilitate the portrayal of quality of bathymetric data as well as autonomous shipping. It is also noted that currently depth contours do not have an attribute to have its vertical uncertainty included.

Marianne Hagaseth of SINTEF Ocean A.S. presented the Hull-to-Hull project (H2H). It is based on uncertainty zones around individual ships – dynamic data exchange for autonomous functions. The overall objective of the project is to address the need of the maritime community to safely navigate in close proximity of other vessels and objects. This has been tested in Norway and Belgium. The project may be of interest of DQWG/S101PT as it is facing the same issues on portrayal of uncertainty.

10. AOB and closure of meeting

Chair presented an overview of the re-survey policy of the NL in the North Sea. Due to the pandemic and other operational issues, NLHO has not been able to maintain its regular re-survey interval. Due to the dynamic seabed of the southern North Sea, NLHO has set up a mechanism to downgrade the CATZOC value in existing S-57 ENC's when a certain period has been reached and the area has not been re-surveyed according to its normal schedule.

Chair presented informative paper Chart and Land Survey Vertical Datums. It addresses the issue that when merging data from land and sea, the usage of vertical datums (sounding datum = vertical datum used at sea for depicting soundings/depth contours etc.) and their associated uncertainty is important. NLHO has published an integrated geoid vertical datum for land (1cm accurate) and sea (3cm accurate) and LAT (6.6 cm accurate). The current S-101 data model does not contain vertical uncertainty for vertical datums. It is suggested that this is added to the model.

David Grant of NIWC noted the submitted paper TSM8-6.5 Vertical CRS vice Datum in Metadata (S-100 Test Strategy Meeting, 2-4 March 2021) addressing: "A vertical datum only indicates the reference plane (surface of zero elevation) for measuring height or depth. The unit of measure and orientation (up or down) should also be provided to support machine-readability and autonomous navigation." (DQWG16/09)

The list of decisions and actions was reviewed and updated. (Annex B)

There were no new nominees for Chair or Vice-Chair. The role of Vice-Chair will be vacant. IHO Members States are kindly requested to consider a candidate for the continuity of this WG. (DQWG16/10)

The next meeting is scheduled to be a physical meeting, 8-11 February 2022. Venue to be decided, Monaco as alternative.



ANNEX A – Terms of Reference

Terms of Reference are available at:

<https://iho.int/en/basic-wg-documents-4>

ANNEX B – List of Decision and Actions

LIST OF DECISIONS & ACTIONS ARISING FROM DQWG-16

Agenda item	Subject	Actions (in bold, action by)	Target Date/Event	Status (16 Feb 2021)
1	DQWG webpage	Update webpage for Reference Documents and Miscellaneous (DQWG16/01 IHO Secr)	Feb 2021	Completed
2	DQWG15 items	Check the model components across S-1xx for timeUncertainty as introduced by TWCWG. (DQWG15/04 Chair)	Review S-104, S-111	Planned
2	DQWG15 items	Develop software to translate Feature Catalogue into excel format. (DQWG15/08 US NOAA/NGA)	12 May 2021	Completed
2	DQWG15 items	Update S-100 part 4c with ISO-19157. (DQWG15/09 - Chair)	TBD	Planned
2	DQWG15 items	Monitor and report inconsistencies between S-67 and INT-1 section V (DQWG15/14 – UK/Chair)	None	Permanent
2	S-101PT report	Timeframe between S-101PT and DQWG to be harmonized (DQWG16/02 – Chair/S101PT Chair)	HSSC13	Permanent
2	CSBWG	Support the CSBWG with a white paper for HO's (ref HSSC13/15). (DQWG16/03 – Chair)	DQWG17	Planned
4	Review S-1xx PS for DQ elements	subWG to review published S-1xx PS for DQ recommendations. (DQWG16/04, NL/SE/UNH)	DQWG17	Planned
6	Review S-1xx Feature Catalogues	Review of S-1xx Feature Catalogues against S-101 Feature Catalogue Ed.1.1.0 (DQWG16/05, TBD)	S-101 Ed.1.1.0	Planned
6	Guidance from survey to CATZOC	Draft a guidance document from survey to CATZOC with general recommendations and best practices. (DQWG16/06, CA, DK, FR, NL, UK, US, CSMART, UNH)	DQWG17	Planned
6	Investigate CATZOC/Usage Bands	Investigate how CATZOC is related to Usage Bands (DQWG16/07, PRIMAR)	DQWG17	Planned
7	Translation of S-67	Translation into French, Chinese (DQWG16/08, France, China)	HSSC13	Work in Progress
10	Vertical Datums/CRS	Monitor outcome of TSM8-6.5 (DQWG16/09, NIWC/Chair)	DQWG17	Planned
11	Vice Chair vacancy	IHO Member States are requested to propose candidate to ensure continuity of the WG (DQWG16/10, IHO MS)	HSSC13	Completed

ANNEX C – DQWG Work Plan

DQWG WORK PLAN 2021-2022

Tasks

- A. Develop and maintain a data quality checklist for product specification developers;
- B. Periodically review S-100 based product specifications to ensure the data quality aspects have been taken into consideration if deemed necessary;
- C. Monitor periodically developments of ISO and other international standards regarding data quality information, and advise accordingly;
- D. Provide guidance on data quality aspects to hydrographic offices, in particular to ensure harmonized implementation;
- E. Provide data quality educational material for the use of mariners;
- F. Review appropriate methodology for the display of quality information to product specification developers;
- G. Propose new data quality topics for consideration by HSSC.

Work Items

Task	Work Item	Priority H=High M=Medium L=Low	Milestones	Start Date	End Date	Status P=planned O=Ongoing C=Completed	Contact Person	Affected Pubs/ Standards	Remarks
B.2	Development of a minimum standard for Data Validation in S-1xx based products.	M	S-101 Ed.2.0.0	2018	2024	P	Chair	S-1xx	None
B.3	Review S-1xx based PS (Ed.1.0.0 or higher)	H	DQWG17	2021	2022	P	Chair	S-1xx	None
B.4	Review S-1xx Feature Catalogues	M	S-101 Ed.1.1.0	2021	2023	P	Chair	S-1xx	None
C.1	Review S-100 Section 4C.	L	S-100 Ed 5.0.0	2022	2024	P	Chair	S-100	DQWG15-04.4B
D.2	Provide guidance documentation how to populate CATZOC values.	H	DQWG17	2021	2022	O	Chair	S-101 DCEG	None
G.1	Monitor development of autonomous shipping by the industry	M	DQWG17	2020	2022	O	Chair	S-101, S-102, S-104	None